REMARKS

1. Status of claims

After entry of the above amendment, claim 13 has been canceled, and claims 14-24 are pending.

2. Support for amendment

The above amendment finds support in the specification at p. 6, lines 1-7.

3. Claim rejections under 35 U.S.C. §§102, 103

The Examiner rejected claims 13-24 under 35 U.S.C. §102(b) as anticipated by, or under 35 U.S.C. §103(a) as obvious over, Sauer, U.S. Pat. No. 3,113,167 ("Sauer"). In view of the above amendment and the attached declaration under 37 CFR 1.132 of Kenneth D. Hope ("Hope Declaration"), Applicants respectfully request this rejection be withdrawn.

As amended, claim 14, and all claims dependent thereon, recite a composition comprising a polyalphaolefin having a Bromine Index of less than 200 mg Bromine per 100 gram sample of polyalphaolefin, wherein the Bromine Index is measured according to ASTM D 2710, modified by the use of isopropanol as an additional solvent. Applicants have observed that generally, the lower the Bromine Index of a polyalphaolefin (as measured by the modified ASTM D 2710), the higher its saturation (*i.e.*, the greater its hydrogenation). Therefore, a low Bromine Index value (as measured by the modified ASTM D 2710) indicates a highly hydrogenated polyalphaolefin.

As taught by the present specification at p. 5, lines 21-25, ASTM D 2710 is a known standard for measuring Bromine Index values, and thus has been considered to indirectly measure the saturation or hydrogenation of a PAO sample. However, the use of ASTM D 2710

to measure Bromine Index values of polyalphaolefins suffers from problems of low accuracy and low repeatability, presumably as a result of the low solubility of polyalphaolefins in the ASTM D 2710 test solvent and the steric hindrance of polyalphaolefins to bromination. By modifying ASTM D 2710 by the use of isopropanol as an additional solvent, Applicants discovered that more accurate and more repeatable measurements of Bromine Index were possible (p. 6, lines 1-7).

The state of the art of measurement of the saturation and oxidative stability of polyalphaolefins (PAOs), and the correlation between the two properties, is summarized by the reference to Gunsel discussed at p. 6, lines 10-26. The degree of saturation of two PAOs was measured according to unmodified ASTM D 2710, and the oxidative stability was measured by the Penn State Microoxidation test. No correlation between the degree of saturation of a PAO (at unmodified ASTM D 2710 Bromine Index values from 2 to 1323) and its oxidative stability was seen.

The oxidative stability of two polyalphaolefin samples having modified ASTM D2710 bromine indexes of 433 and 0.95 were evaluated using the same Penn State Microoxidation test equipment as used in Gunsel. The test data showed a clear link between degree of PAO saturation, as measured by the modified ASTM D 2710 Bromine Index assay, and oxidative stability. This is in direct contrast to the results reported in Gunsel, discussed above. For more discussion of this point, see the Hope Declaration, paragraph 6. Additionally, Gunsel's polyalphaolefin having an unmodified Bromine Index value of 2 was found to be much less oxidatively stable than a polyalphaolefin with a modified Bromine Index value of 433. This lead to the inventors' conclusion that the Bromine Index value of 2 reported by Gunsel is not an accurate indication of said polyalphaolefins degree of saturation as discussed at p. 6, lines 10-26,

teaching hydrogenation by "exceptionally intimate contact" of liquid polyalphaolefin with a catalyst. Cupples, at most, suggests, but does not teach, that its hydrogenation technique was superior to those known in the art. However, Cupples does not quantify the saturation of its PAOs and does not report any method for doing so. Given the state of the art prior to the present invention, Cupples might have produced a polyalphaolefin having a low unmodified ASTM D 2710 Bromine Index value, but there is no teaching or suggestion to indicate Cupples' polyalphaolefin would have a low modified Bromine Index value, as presently claimed. This is supported by the statement in the Hope Declaration, paragraph 8, that the reduction to practice of the present invention represented process modifications to the techniques taught by Cupples. Therefore, Cupples does *not* teach or suggest hydrogenation to the extent recited by the present claims, and this reference fails to anticipate them or render them obvious. Applicants request these rejections of claims 14-24 be withdrawn.

Third, the Examiner rejected claims 13-24 under 35 U.S.C. §102(b) as anticipated by, or under 35 U.S.C. §103(a) as obvious over, Wu et al., U.S. Pat. No. 5,276,227 ("Wu"). In view of the above amendment, Applicants respectfully request this rejection be withdrawn.

Wu's teachings and suggestions are similar to those of Sauer or Cupples, and suffer the same failure to anticipate or render obvious the present claims. Wu teaches hydrogenation of polyalphaolefins to a Bromine Number (*not* Index) "usually lower than 4 [g Br per 100 g PAO]" Given the state of the art prior to the present invention, there is no teaching or suggestion to indicate Wu's polyalphaolefin would have a low modified Bromine Index value. Therefore, Wu does *not* teach or suggest hydrogenation to the extent recited by the present claims, and this reference fails to anticipate them or render them obvious. Applicants request these rejections of claims 14-24 be withdrawn.

4. Final remarks

Applicants submit all pending claims 14-24 are in condition for allowance. The Examiner is invited to contact the undersigned patent agent at (713) 934-4065 with any questions, comments or suggestions relating to the referenced patent application.

Respectfully submitted,

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